

Department of Energy  
Carlsbad Field Office  
P. O. Box 3090  
Carlsbad, New Mexico 88221

07 AUG 2003



Mr. Steve Zappe, WIPP Project Leader  
Hazardous Waste Permits Program  
Hazardous and Radioactive Materials Bureau  
New Mexico Environment Department  
2905 E. Rodeo Park Drive, Bldg. 1  
Santa Fe, NM 87505

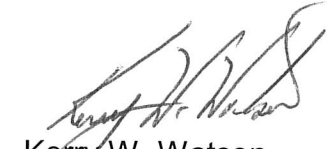
Subject: Transmittal of Approved Waste Stream Profile Form for Rocky Flats  
Environmental Technology Site, Waste Stream Profile Form Number  
RF110.05 – Transuranic Mixed Filter Media

Dear Mr. Zappe:

The Department of Energy, Carlsbad Field Office (CBFO) has approved the Rocky Flats Environmental Technology Site (RFETS), Waste Stream Profile Form RF110.05. Enclosed is a copy of the approved form as required by Section B-4(b)(1) of the WIPP Hazardous Waste Facility Permit No. NM4890139088-TSDF.

If you have any questions on this matter, please contact me at (505) 234-7357 or (505) 706-0066.

Sincerely,

  
Kerry W. Watson  
CBFO Assistant Manager  
Office of National TRU Program

Enclosure

cc: w/o enclosure  
J. Kieling, NMED  
C. Walker, TechLaw  
J. Bennett, WTS  
P. Roush, WTS  
L. Greene, WRES  
S. Calvert, CTAC  
CBFO M&RC



## WIPP WASTE STREAM PROFILE FORM

RF110.05, Revision 0.

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Waste Stream Profile Number: RF110.05

Generator site name: RFETS

Technical contact: Eric D'Amico

Generator site EPA ID: CO7890010526

Phone number: (303) 966-5362

Date of audit report approval by NMED: March 9, 2000 as amended February 7, 2001; June 5, 2001; April 8, 2002; August 20, 2002; August 29, 2002 and April 8, 2003

Title, version number, and date of documents used for WAP certification: Rocky Flats Environmental Technology Site TRU Waste Characterization Program Quality Assurance Project Plan, 95-QAPJP-0050, Revision 6, March 2002.

Transuranic (TRU) Waste Management Manual, Revision 5, 1-MAN-008-WM-001, May 2002. Contact-Handled

Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant, Revision 0.1, July 2002.

Did your facility generate this waste? ☒ Yes ☐ No If no, provide the name and EPA ID of the original generator:**Waste Stream Information<sup>(1)</sup>**

WIPP ID: RF-MR-0331, RF-MT-0331, RF-MT-0335

Summary Category Group: S5000

Waste Matrix Code Group: Filters

Waste Stream Name: Filters and Media/TRM

Description from the WTWBIR: Ful-Flo filters used to filter solids from aqueous solutions. Additional required processing undetermined. High efficiency particulate air filters used on glovebox air intakes and exhausts.<sup>(2)</sup>Defense TRU Waste: ☒ Yes ☐ NoCheck one: ☒ CH ☐ RH Number of SWBs 7 Number of Drums 97 Number of Canisters N/A

Batch Data Report numbers supporting this waste stream characterization: See Table 7.

List applicable EPA Hazardous Waste Codes: D022, F001, F002

Applicable TRUCON Content Codes: RF 119A, RF 119BA, RF 119BAF, RF 119C, RF 119D, RF 119DF, RF 119E, RF 119EF, RF 119F, RF 119G, RF 119GF, RF 119H, RF 119I, RF 119J, RF 119K, RF 119KF, RF 119L, RF 119M, RF 119MF, RF 119N, RF 119P, RF 119PF, RF 119Q, RF 119R, RF 119RF, RF 119S, RF 119SF, RF 119T

**Acceptable Knowledge Information<sup>(1)</sup>****Required Program Information**

- Map of site: Reference List, No. 3
- Facility mission description: Reference List, No. 3
- Description of operations that generate waste: Reference List, Nos. 1, 2, 3, 6
- Waste identification/categorization schemes: Reference List, Nos. 8, 9
- Types and quantities of waste generated: Reference List, Nos. 1, 2, 3, 6
- Correlation of waste streams generated from the same building and process, as appropriate: Reference List, Nos. 1, 2, 6
- Waste certification procedures: Reference List, No. 5

**Required Waste Stream Information**

- Area(s) and building(s) from which the waste stream was generated: Reference List, Nos. 1, 2, 6
- Waste stream volume and time period of generation: Reference List, Nos. 4, 6
- Waste generating process description for each building: Reference List, Nos. 1, 2, 6
- Process flow diagrams: Reference List, Nos. 1, 2
- Material inputs or other information identifying chemical/radionuclide content and physical waste form: Reference List, Nos. 1, 2, 3, 6

- Which Defense Activity generated the waste: (Check one) Reference List, No. 3

- |  |   |
|--|---|
| <input checked="" type="checkbox"/> Weapons activities including defense inertial confinement fusion             | <input type="checkbox"/> Naval Reactors development           |
| <input type="checkbox"/> Verification and control technology   | <input type="checkbox"/> Defense research and development     |
| <input type="checkbox"/> Defense nuclear waste and material by products management                               | <input type="checkbox"/> Defense nuclear materials production |
| <input type="checkbox"/> Defense nuclear waste and materials security and safeguards and security investigations |   |

Reviewed for Classification/UCNI

By: Vivian S. Sendelweck

Date: 31 July 03 UNU

Approved for Public Release

## WIPP WASTE STREAM PROFILE FORM

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Supplemental Documentation:

- Process design documents: Note 3
- Standard operating procedures: Note 3
- Safety Analysis Reports: Note 3
- Waste packaging logs: Note 3
- Test plans/research project reports: Note 3
- Site data bases: Note 3
- Information from site personnel: Note 3
- Standard industry documents: Note 3
- Previous analytical data: Note 3
- Material safety data sheets: Note 3
- Sampling and analysis data from comparable/surrogate Waste: Note 3
- Laboratory notebooks: Note 3

Sampling and Analysis Information<sup>(1)</sup>*[For the following, when applicable, enter procedure title(s), number(s) and date(s)]*

- ☒ Radiography: Reference List Nos. 13, 14, 20
- ☒ Visual Examination: 11, 12, 16, 17, 18, 19, 21
- ☒ Headspace Gas Analysis
  - VOCs: Reference List, No. 7, 15
  - Flammable: Reference List, No. 7, 15
  - Other gases (specify): N/A
- ☐ Homogeneous Solids/Soils/Gravel Sample Analysis (Tables 1, 3, 4, and 5 are not applicable and not included)
  - Total metals: N/A
  - PCBs: N/A
  - VOCs: N/A
  - Nonhalogenated VOCs: N/A
  - Semi-VOCs: N/A
  - Other (specify): N/A

Waste Stream Profile Form certification:

I hereby certify that I have reviewed the information in this Waste Stream Profile Form, and it is complete and accurate to the best of my knowledge. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

  
Signature of Site Project Manager

G. A. O'Leary, Manager TRU Programs  
Printed Name and Title

7/31/03  
Date

  
Signature of Site QA Officer

C. L. Ferrera, TWCP Site QAO  
Printed Name and Title

7/31/03  
Date

- NOTE**
- (1) Use back of sheet or continuation sheets, if required.
  - (2) The Description from the WTWBIR is not completely correct. The Ful-Flo filters in this waste stream were used to filter solids from oil and solvents.
  - (3) See the References section in the Acceptable Knowledge Summary (attached) for additional backup documentation associated with this waste stream.

## REFERENCE LIST

1. Backlog Waste Reassessment Baseline Book, Waste Form 54, Filters, February 2003.
2. Waste Stream and Residue Identification and Characterization (WSRIC), Version 7, and archived versions.
3. RFETS TRU Waste Acceptable Knowledge Supplemental Information, RF/RMRS-97-018, Revision 10, August 2002.
4. Waste and Environmental Management System (WEMS) database.
5. Transuranic (TRU) Waste Certification, PRO-X05-WC-4018, Revision 4, May 2002.
6. Acceptable Knowledge TRU/TRM Waste Stream Summaries, RMRS-WIPP-98-100, Section 7.10, Revision 0, June 2003.
7. GC/MS Determination of Volatile Organics Waste Characterization, L-4111-X, January 2002.
8. Waste Characterization, Generation, and Packaging, 1-PRO-079-WGI-001, Revision 4, May 2002.
9. Waste Characterization Program Manual, 1-MAN-036-EWQA-Section 1.6.1, Revision 3, May 2002.
10. Interoffice Memorandum from Thomas R. Gatliffe to Eric L. D'Amico, Headspace Gas Analysis Data Evaluation Report For Waste Stream Profile RF110.05 (TRM Filter Wastes [F001,F002]) Lot 1, TRG-099-03, June 2003.
11. Visual Examination for Confirmation of RTR, 4-H80-776-ASRF-007, Revision 5, June 2001.
12. TRU/TRM Waste Visual Verification (V<sup>2</sup>) and Data Review, PRO-1031-WIPP-1112, Revision 2, February 2003.
13. Real-Time Radiography Testing of Transuranic and Low-Level Waste, 4-W30-NDT-00664, Revision 5, October 2001.
14. Real-Time Radiography Testing of Transuranic and Low-Level Waste in Building 569, 4-I19-NDT-00569, Revision 6, January 2002.
15. Headspace Gas Sampling And Analysis Using An Automated Manifold, L-4231-F, March 2002.
16. Residue Repack, Building 371; PRO-544-SALT Repack-371, Revision 5, January 2002.
17. Visual Examination for Confirmation of RTR, PRO-1471-VE-771, Revision 0, November 2001.
18. Glovebox and C-Cell Waste Operations, PRO-1358-440-VERP, Revision 2, September 2002.
19. RTR Visual Examination Confirmation, Building 371; PRO-1608-VECRTR-371, Revision 0, October 2002.
20. Mobile Real-Time Radiography Testing of Transuranic and Low-Level Waste, PRO-1520-Mobile-RTR, Revision 0, May 2002.
21. Combustible Residue Repackaging, PRO-823-REPACK-371, Revision 1, March 2001.

**Form A**  
**Reconciliation with Data Quality Objectives**

I certify by signature (below) that sufficient data have been collected to determine the following Program-required waste parameters:

WSPF # RF110.05

Item	Check Box <sup>a</sup>	Reconciliation Parameter
1	✓	Waste Matrix Code as reported in WEMS.
2	✓	Waste Material Parameter Weights for individual containers as reported in WEMS.
3	✓	The waste matrix code identified is consistent with the type of sampling and analysis used to characterize the waste.
4	✓	Container mass and activities of each radionuclide of concern as reported in WEMS.
5	✓	Each waste container of waste contains TRU radioactive waste.
6	✓	Mean concentrations, UCL <sub>90</sub> for the mean concentrations, standard deviations, and the number of samples collected for each VOC in the headspace gas of waste containers in the waste stream/waste stream lot.
7	N/A	Mean concentrations, UCL <sub>90</sub> for the mean concentrations, standard deviations, and number of samples collected for VOCs in the waste stream/waste stream lot. Summary Categories S3000 and S4000.
8	N/A	Mean concentrations, UCL <sub>90</sub> for the mean concentrations, standard deviations, number of samples collected for SVOCs in the waste stream/waste stream lot. Summary Categories S3000 and S4000.
9	N/A	Mean concentrations, UCL <sub>90</sub> for the mean concentrations, standard deviations, and number of samples collected for metals in the waste stream/waste stream lot. Summary Categories S3000 and S4000.
10	N/A	Sufficient number of samples was taken to meet statistical sampling requirements.
11	✓	Only validated data were used in the above calculations, as documented through the site data review and validation forms and process.
12	✓	Waste containers were selected randomly for sampling, as documented in site procedures.
13	✓	The potential flammability of TRU waste headspace gases.
14	✓	Sufficient number of waste containers was visually examined to determine with a reasonable level of certainty that the UCL <sub>90</sub> for the misclassification rate is less than 14 percent.
15	✓	Whether the waste stream exhibits a toxicity characteristic (TC) under 40 CFR Part 261, Subpart C.
16	✓	All TICs were appropriately identified and reported in accordance with the requirements of the WIPP WAP prior to submittal of a waste stream profile form for a waste stream or waste stream lot.
17	✓	The overall completeness, comparability, and representativeness QAOs were met for each of the analytical and testing procedures as specified in the WIPP WAP Sections B3-2 through B3-9 prior to submittal of a waste stream profile form for a waste stream or waste stream lot.
18	✓	The RTLs (i.e., PRQLs) for all analyses were met prior to submittal of a waste stream profile form for a waste stream or waste stream lot.
19	✓	Appropriate packaging configuration and DAC were met and documented in the headspace gas sampling documentation and the drum age was met prior to sampling.
20	✓	Whether the waste stream can be classified as hazardous or non-hazardous at the 90-percent confidence limit.

<sup>a</sup> Check (✓) indicates that data or acceptable knowledge are sufficient to determine the waste parameters and that the waste parameters have been reported in the listed document or database. N/A indicates parameter does not apply to waste stream. NO indicates data are insufficient.

  
Signature of Site Project Manager

G. A. O'Leary  
Printed Name

7/31/03  
Date

Data Summary Report—Table 2: Headspace Gas Summary Data

WSPF # RF110.05

Sampling and Analysis Method (check one):

☒ 100% Sampling☐ Reduced Sampling

2A

ANALYTE <sup>a</sup>	# Samples <sup>b</sup>	Transform Applied <sup>c</sup>	Normality Test (Pass/Fail) <sup>d</sup>	Mean <sup>d</sup>	UCL <sub>90</sub> <sup>d</sup>	RTL <sup>e</sup>	EPA Code <sup>f</sup>
1,1-Dichloroethane	14	Log	Pass	0.663	0.948	2.3026	
1,2-Dichloroethane	13	Sq Rt	Pass	1.397	1.557	3.1623	
1,1-Dichloroethylene	12	Sq Rt	Pass	1.387	1.531	3.1623	
cis-1,2-Dichloroethylene	5	Log	Fail <sup>h</sup>	0.116	0.363	2.3026	
trans-1,2-Dichloroethylene	2	Log	Fail <sup>h</sup>	0.262	0.372	2.3026	
1,1,2,2-Tetrachloroethane	0			1.071		10	
1,1,1-Trichloroethane	9	Log	Fail <sup>h</sup>	0.838	1.276	2.3026	
1,1,2-Trichloro-1,2,2-trifluoroethane	8	Log	Fail <sup>h</sup>	0.380	0.645	2.3026	
1,2,4-Trimethylbenzene	1	Sq Rt	Fail <sup>h</sup>	1.022	1.091	NA	
1,3,5-Trimethylbenzene	0			1.048		NA	
Acetone	8	Log	Fail <sup>h</sup>	2.653	2.857	4.6052	
Benzene	10	Log	Pass	0.364	0.586	2.3026	
Bromoform	0			1.015		10	
Butanol	1	Sq Rt	Fail <sup>h</sup>	3.440	3.604	10	
Carbon disulfide	4	Log	Fail <sup>h</sup>	0.051	0.222	2.3026	
Carbon tetrachloride	23	Log	Fail <sup>h</sup>	3.201	3.914	2.3026	F001
Chlorobenzene	0			0.968		10	
Chloroform	25	Log	Fail <sup>h</sup>	2.599	3.161	2.3026	D022
Cyclohexane	0			1.126		NA	
Ethyl benzene	0			1.050		10	
Ethyl ether	0			1.104		10	
Methanol	4	Log	Fail <sup>h</sup>	2.719	2.874	4.6052	
Methyl ethyl ketone	1	None	Fail <sup>h</sup>	11.99	13.25	100	
Methyl isobutyl ketone	0			11.898		100	
Methylene chloride	24	Sq Rt	Pass	3.177	3.634	3.1623	F001, F002
o-Xylene	0			0.976		10	
m,p-Xylene	0			2.146		10	
Tetrachloroethylene	16	Log	Pass	1.017	1.398	2.3026	
Toluene	27	Sq Rt	Pass	2.500	2.733	8.4865 <sup>g</sup>	
Trichloroethylene	16	Log	Pass	1.029	1.375	2.3026	

## NOTES:

<sup>a</sup> A total of 32 samples were collected and analyzed. Analysis was performed for all analytes identified. Samples were not composited.

<sup>b</sup> Identifies the number of samples in which the associated analyte was detected.

<sup>c</sup> Identifies the type of data transformation used, if applicable, to achieve (or better achieve) a normal probability distribution of the data.

**Data Summary Report – Table 2: Headspace Gas Summary Data (continued)**

- <sup>d</sup> Statistics calculated based on using 1/2 the MDL for less-than-detectable observations with data transformation as identified (Reference 10). When transformation was applied, the Mean, UCL<sub>90</sub> and PRQL values presented are the transformed values (Reference 10). With no detectable concentrations, listed mean reflects average of one-half of reported MDL values (in ppmv) for analyte and calculation of standard deviation and UCL<sub>90</sub> values is not meaningful. With fewer than five detectable concentrations, calculated values for UCL<sub>90</sub> are subject to potentially large relative error.
- <sup>e</sup> RTLs for headspace gas analysis results correspond to the analyte PRQL for WIPP WAP target analytes. "NA" means the analyte is not a WIPP WAP target analyte, but instead a flammable VOC that is analyzed for compliance with the TRUPACT-II Authorized Methods for Payload Control (TRAMPAC). When transformation was applied, the PRQL value presented is the transformed value of the PRQL.
- <sup>f</sup> No entry indicates no associated EPA Code assigned to the waste stream based on headspace analysis.
- <sup>g</sup> Transformed limit used for evaluation of EPA Hazardous Waste Code for toluene (Reference No. 3).
- <sup>h</sup> Data set (with or without transformation) did not pass the test for normality. The data set that most approximated a normal distribution was used for computation of statistics.

## Data Summary Report—Table 2: Headspace Gas Summary Data (continued)

WSPF # RF110.05

2B

TENTATIVELY IDENTIFIED COMPOUND	Maximum Observed Estimated Concentrations (ppmv) <sup>b</sup>	# Samples Containing TIC <sup>b</sup>
Ethyl butyl ketone, CAS # 106-35-4	1.7	1
Ethanol, CAS # 64-17-5	11	1

Did the data verify the acceptable knowledge? ☐ Yes ☒ No

Data as reported in Data Summary Report – Table 2 confirms acceptable knowledge for EPA codes F001 and F002 for the analytes carbon tetrachloride and methylene chloride.

If not, describe the basis for assigning the EPA Hazardous Waste Codes:

As reported in Data Summary Report – Table 2, the UCL<sub>90</sub> for chloroform is greater than the associated PRQL. Therefore, EPA code D022 is added to this waste stream based on the headspace gas sampling and analysis results as required by the WIPP WAP.



**Data Summary Report—Table 6: Exclusion of Prohibited Items****WSPF # RF110.05**

The absence of prohibited items is documented through acceptable knowledge. Radiography or visual examination is performed on each container in this waste stream to verify the absence of the following prohibited items:

- Liquids
- Non-radionuclide pyrophoric materials
- Waste incompatible with backfill, seal and panel closure materials, container and packaging materials, shipping container materials, or other wastes
- Explosives or compressed gases
- PCBs in concentrations greater than or equal to 50 ppm
- Waste exhibiting the characteristics of ignitability, corrosivity or reactivity
- Non-mixed hazardous wastes

Newly generated waste is characterized by visual verification (VV) at the time of waste packaging using the visual examination (VE) technique unless the use of radiography in lieu of, or in combination with, visual verification is justified by any of the following criteria:

- Visual verification was conducted during packaging, but was unacceptable,
- Visual verification requires extensive handling of high gram content waste that results in high radioactive exposure for the VV personnel,
- Situations where waste packaging is conducted at numerous locations generating small quantities of transuranic waste requiring a large number of VV personnel, and/or
- Where waste was originally packaged as low-level waste, but subsequently determined to be transuranic.

Data Summary Report—Table 7: Correlation  
of Container Identification to Batch Data Reports

WSPF # RF110.05

Package No.	Radioassay Data Package	Headspace Sample Batch No.	Headspace VOC Data Package	RTR Data Package <sup>a</sup>	VE or VV Data Package <sup>b</sup>
D57556	CPN-01-045	01W0180	HVOC-DP-00507	6T-1858	
D59668	569IP1-DP-020602	02W0018	HGAS-DP-00342	5T-0285	
D64650	569IP1-DP-011502	01W0193	HVOC-DP-00517	6T-2002	
D72389	SGS-371-DP-00-086	02W0197	HGAS-DP-00266	6T-2049	
D87452	CPN-99-003	01W0107	HVOC-DP-00439	6T-1505	
D94001	371TG1-DP-041802	03W0099	HGAS-DP-00455		WC-DP-116
D96427	371TG1-DP-041802	03W0099	HGAS-DP-00455		WC-DP-118
D96939	371TG1-DP-041702	03W0099	HGAS-DP-00455		WC-DP-118
DA3218	371TG1-DP-101101	03W0032	HGAS-DP-00392	6T-2117	
DA4026	371TG1-DP-041802	03W0074	HGAS-DP-00433		WC-DP-119
DA4798	371TG1-DP-041802	03W0069	HGAS-DP-00427		WC-DP-119
DB2540	371TG1-DP-101100	02W0047	HGAS-DP-00364	6T-2034	
DB2567	CPN-01-022	02W0090	HGAS-DP-00294	6T-1803	
DB2736	371TG1-DP-101100	02W0133	HGAS-DP-00295	6T-2055	
DB4855	371TG1-DP-102000	02W0073	HGAS-DP-00346	5T-0262	
DB4858	371TG1-DP-101600	02W0109	HGAS-DP-00273	6T-2059	
DB5935	CPN-01-040	01W0204	HVOC-DP-00530	5T-0149	
DC1142	371TG1-DP-032602	03W0073	HGAS-DP-00430		WC-DP-108
DC8971	371TG1-DP-041802	03W0115	HGAS-DP-00470		WC-DP-127
DD0682	371TG1-DP-032602	03W0070	HGAS-DP-00428		WC-DP-108
DD0689	569IP1-DP-071802	03W0074	HGAS-DP-00433		WC-DP-108
DD0901	371TG1-DP-032102	03W0070	HGAS-DP-00428		WC-DP-111
DD0902	371TG1-DP-032002	03W0112	HGAS-DP-00468		WC-DP-111
DD0917	371TG1-DP-032602	03W0069	HGAS-DP-00427		WC-DP-111
DD0941	371TG1-DP-040802	03W0073	HGAS-DP-00430		WC-DP-128
DD1407	371TG1-DP-040802	03W0072	HGAS-DP-00431		WC-DP-131
DD1410	371TG1-DP-040902	03W0072	HGAS-DP-00431		WC-DP-128
DD1413	371TG1-DP-032502	03W0087	HGAS-DP-00445		WC-DP-111
DD1414	371TG1-DP-032502	03W0087	HGAS-DP-00445		WC-DP-112
DD1422	371TG1-DP-032502	03W0086	HGAS-DP-00443		WC-DP-112
DD1585	371TG1-DP-041002	03W0074	HGAS-DP-00433		WC-DP-129
DD1592	371TG1-DP-040402	03W0071	HGAS-DP-00429		WC-DP-130

**NOTES:**

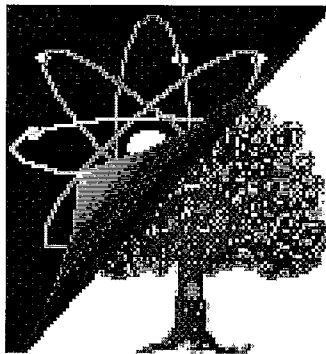
<sup>a</sup> No entry indicates visual verification (VV) at the time of waste packaging using the visual examination (VE) technique was performed for the container.

<sup>b</sup> No entry indicates container was not selected for visual examination to confirm RTR and did not undergo VV at the time of waste packaging using the VE technique.

**Acceptable Knowledge Summary**

**WSPF # RF110.05**

RMRS-WIPP-98-100, Acceptable Knowledge TRU/TRM Waste Stream Summaries, Section 7.10, TRM Filter Debris Waste (D022, F001, F002) (attached).



**Rocky Flats Environmental Technology Site**

**ACCEPTABLE KNOWLEDGE INFORMATION**

**ACCEPTABLE KNOWLEDGE TRU/TRM  
WASTE STREAM SUMMARIES**

**RMRS-WIPP-98-100**

**Section 7.10**

**TRM Filter Debris Waste (D022, F001, F002)**

**Profile No. RF110.05**

**Revision 2**

Reviewed for Classification/UCNI

By: Unclassified Not UCNI

Reference Exemption Number CEX-032-00

Date: August 6, 2003

**7.10 TRM Filter Debris Waste (D022, F001, F002)**

**Profile No. RF110.05**

**Acceptable Knowledge Waste Stream Summary**

Waste Stream Name: TRM Filter Debris Waste (D022, F001, F002)

Generation Buildings: Buildings 371, 707, 774, 776, and 777<sup>(5,13)</sup>

Waste Stream Volume (Retrievably Stored): 44 55-gallon drums<sup>(5,13)</sup>

Generation Dates (Retrievably Stored): January 1987 – February 2001<sup>(5,13)</sup>

Waste Stream Volume (Newly Generated): 50 55-gallon drums and 4 standard waste boxes<sup>(5,13)</sup>

Generation Dates (Newly Generated): February 2002 – May 2003<sup>(5,13)</sup>

Waste Stream Volume (Projected): 3 55-gallon drums and 3 standard waste boxes<sup>(13)</sup>

Generation Dates (Projected): June 2003 – March 2004<sup>(13)</sup>

TRUCON Content Codes<sup>(1)</sup>: RF 119A, RF 119BA, RF 119BAF, RF 119C, RF 119D, RF 119DE, RF 119E, RF 119EF, RF 119F, RF 119G, RF 119GF, RF 119H, RF 119I, RF 119J, RF 119K, RF 119KF, RF 119L, RF 119M, RF 119MF, RF 119N, RF 119P, RF 119PF, RF 119Q, RF 119R, RF 119RF, RF 119S, RF 119SF, RF 119T

Process Knowledge Demonstrates Flammable VOCs in Headspace < 500 ppm: Yes (see Sec. 7.10.6)

**7.10.1 Transuranic Waste Baseline Inventory Report Information<sup>(2)</sup>**

WIPP Identification Numbers: RF-MR-0331, RF-MT-0331, RF-MT-0335

Summary Category Group: S5000 Waste Matrix Code Group: Filters

Waste Matrix Code: S5410 Waste Stream Name: Filters and Media/TRM

Description from the TWBIR: Ful-Flo filters used to filter solids from aqueous solutions. Additional required processing undetermined. High efficiency particulate air filters used on glovebox air intakes and exhausts.

NOTE: The description from the TWBIR is not completely correct. The Ful-Flo filters in this waste stream were used to filter solids from oils and solvents.

#### 7.10.2 Waste Stream Description

Transuranic mixed (TRM) filter debris assigned EPA Hazardous Waste Numbers D022, F001, and F002 consists of Ful-Flo filters (IDC 331) and nonacid-contaminated absolute drybox filters (IDC 335). Material that was trapped in the Ful-Flo filters was the same material that would have contaminated the drybox filters. This waste is generated by similar activities, and is similar in material, physical form, and hazardous constituents, and therefore, is considered a single waste stream. Table 7.10-1 presents the waste matrix codes and waste material parameters for filter debris waste.<sup>(3)</sup>

**Table 7.10-1, Filter Debris Waste (D022, F001, F002) Description**

IDC	IDC Description	Waste Matrix Code	Waste Material Parameters	Weight % (Average)
331	Ful-Flo Filters, not from Incinerator	S5410, Composite Filters	Cellulosics	45%
			Plastics	45%
			Organic Matrix	10%
335	Absolute Drybox Filters, Not Acid Contaminated	S5410, Composite Filters	Cellulosics	80%
			Aluminum-based Metal/Alloys	13%
			Other Inorganic Materials	5%
			Rubber	2%

**IDC 331, Ful-Flo Filters not from Incinerators:** Ful-Flo filters are in-line cartridge type filters used for collecting particulates from liquid streams. The materials of construction for Ful-Flo filters vary depending on the filter type and style. Some are comprised of a cellulose or acrylic fiber with a phenolic or melamine resin binder. Others have a winding and matrix of polypropylene or cotton with a polypropylene core. Some might have a polypropylene cap on one end.<sup>(4)</sup>

**IDC 335, Absolute Drybox Filters, Not Acid Contaminated:** Drybox filters, not acid contaminated, are HEPA filters used on glovebox air intakes and exhausts. The filters consist of a filter medium contained within a wood frame. Older medium consisted of glass fiber with a small percentage of asbestos and a corrugated aluminum foil. Newer medium is constructed of glass and aromatic polyamide fibers (Nomex) and aluminum alloy metal. Wood filter frames are constructed of 3/4-inch fire retardant exterior grade plywood, or particle board.<sup>(4)</sup>

#### 7.10.3 Areas of Operation

TRM filter debris waste assigned EPA Hazardous Waste Numbers D022, F001, and F002 were generated by the following defense operations in Buildings 371, 707, 774, 776, and 777.<sup>(3,4,9,10,11,12)</sup>

- Plutonium Production
- Waste and Residue Repackaging and Treatment
- Decontamination and Decommissioning Operations (D&D)

#### 7.10.4 Generation Processes

This waste stream includes filter debris waste assigned EPA hazardous waste numbers D022, F001, and F002, generated primarily from production operations, but also includes filters from waste and residue repackaging and treatment operations, and D&D operations. Process flow diagrams can be found in *WSRIC Building Books* or archived *WSRIC* files.

TRM filters in this waste stream were primarily generated from the filtration of spent solvents and machining oils from production operations in Buildings 707 and 777. Solvents consisting of carbon tetrachloride, Freon TF (1,1,2-trichloro-1,2,2-trifluorethane), or 1,1,1-trichloroethane (TCA), were utilized for cleaning plutonium parts and scrap plutonium in the machining, grit blasting, assembly, and briquetting processes. Particulates from these spent solvents and machining oils collected in Ful-Flo filters (IDC 331) as these liquids were transferred to the carbon tetrachloride and TCA systems in Buildings 707 and 777 for storage pending waste treatment in Building 774. Prior to discharge to Building 774, the solvents and oils were circulated several times through Ful-Flo filter systems to reduce the plutonium and americium concentrations below transfer limits. The Ful-Flo filters from the production gloveboxes and the carbon tetrachloride and TCA operations were generated from filter change out, conducted as necessary.<sup>(4,6,7)</sup>

This waste stream also includes glovebox filters (IDC 335) from Building 774. These filters were contaminated during the solidification of waste oils and solvents from production operations.<sup>(4,8)</sup>

More recent waste generation activities included deactivation, decontamination and decommissioning of gloveboxes and equipment used for historical operations in Buildings 707, 774, and 776/777.<sup>(10,11,12)</sup>

Filters in this waste stream were also repackaged in Buildings 371 and 776. Waste containers were opened, the contents removed and inspected, then repackaged to meet Interim Safe Storage Criteria and WIPP Waste Acceptance Criteria. Absorbent may also be added during repackaging to prevent the accumulation of liquids. In Building 371, drums of filter waste were also overpacked in Standard Waste Boxes to meet WIPP requirements.<sup>(4,9)</sup>

7.10.5 RCRA Characterization

This waste stream is characterized as a mixed waste. The specific BWR Baseline Book Subpopulations and WSRIC Process Numbers associated with filter debris waste assigned EPA hazardous waste numbers D022, F001 and F002 are listed in the WEMS AK Waste Stream Summary for Profile Number RF110.05.<sup>(5)</sup>

This waste stream was generated primarily from historical production operations in Buildings 707 and 777. These operations used carbon tetrachloride, 1,1,2-trichloro-1,2,2-trifluoroethane, and 1,1,1-trichloroethane for cleaning and degreasing. The filters from the Building 774 solidification process are contaminated with these same solvents. Therefore, this waste stream is assigned EPA hazardous waste numbers F001 and F002.<sup>(4)</sup>

The repackaging processes did not use hazardous constituents. The F001 and F002 assigned to filter debris from these processes were derived from the EPA hazardous waste numbers assigned to the waste that was treated and/or repackaged.<sup>(4,9)</sup>

Hazardous constituents were not used for D&D of gloveboxes and equipment. The F001 and F002 assigned to filter debris from D&D operations were derived from the EPA hazardous waste numbers assigned to materials handled in these gloveboxes.<sup>(4,10,11,12)</sup>

This waste stream also includes containers that were originally assigned to a different waste stream by acceptable knowledge (AK), but were subsequently segregated into this waste stream after completion of headspace gas sampling/analysis. EPA hazardous waste numbers F001 and F002 were added to this waste because detectable concentrations of these listed VOCs were found in the container headspace.<sup>(4)</sup>

Visual examination of waste contents at the time of packaging and/or RTR was used to verify that the waste stream does not contain free liquid, explosives, non- radionuclide pyrophoric materials, compressed gasses, or reactive waste. Therefore, this waste stream does not exhibit the characteristics of ignitability (D001), corrosivity (D002), or reactivity (D003).

Beryllium parts were used in the manufacture/assembly of weapons components, and residual beryllium contamination of plutonium parts may have occurred. Filters associated with these operations may have been contaminated with beryllium and therefore, residual quantities of beryllium may be present in the waste stream. Any beryllium present is as a contaminant of the process and not as unused commercial chemical product, and therefore is not a P015-listed waste.<sup>(3,4,9,10,12)</sup>

Filter debris waste are also assigned EPA hazardous waste numbers D002, D007, D009, and D019 in the Transuranic Waste Baseline Inventory Report.<sup>(2)</sup> As described above,



visual examination or RTR are used to ensure liquids are not present, and therefore, the waste will not exhibit the characteristic of corrosivity (D002). Although carbon tetrachloride (D019) is present in the waste, it was used as a solvent, and therefore, the waste stream is assigned the more specific EPA hazardous waste number F001. Filters assigned other EPA hazardous waste numbers, including D007 and D009, are not included in this waste stream but will be included in a separate filter debris waste stream.

The drybox filters (IDC 335) generated at RFETS and sent to the INEEL for storage have the same IDC but are considered different waste streams because of the EPA hazardous waste numbers assigned. The INEEL waste streams (Local ID Number ID-RFO-335T) were generated and shipped to INEEL prior to the full implementation of RCRA and therefore, EPA hazardous waste numbers were assigned to each IDC as a whole.<sup>(2)</sup>

Headspace gas sampling and analysis of containers assigned to this waste stream by AK detected 20 VOCs. The calculated 90% upper confidence limit for the mean concentration of carbon tetrachloride and methylene chloride exceeded the regulatory threshold limit (RTL). These analytes are collectively associated with EPA hazardous waste numbers F001 and F002. AK is confirmed by headspace gas sampling and analysis for these hazardous constituents in this waste stream. However, in addition to the F-listed constituents, chloroform was detected in significant concentrations in several headspace gas samples, and the calculated UCL<sub>90</sub> is significantly greater than the PRQL. Further review of AK did not identify a source for chloroform. Therefore, based on the results of headspace gas analysis, this waste stream is also assigned EPA hazardous waste number D022 as required by the WIPP WAP.<sup>(4,14)</sup>

#### 7.10.6 Transportation

The payload containers in this waste stream must also comply with the TRUPACT-II Authorized Methods for Payload Control (TRAMPAC) requirements. Flammable volatile organic compounds (VOCs) were not identified in this waste stream based on the descriptions in the *BWR Baseline Book* and *WSRIC Building Books*. Therefore, flammable VOCs in the payload container headspace are not expected to exceed 500 ppm.<sup>(4,9,10,11,12)</sup>

#### 7.10.7 Radionuclides

Table 7.10-2 presents the radionuclides potentially present in TRM filter debris waste assigned EPA Hazardous Waste Numbers D022, F001, and F002.<sup>(3)</sup>

**Table 7.10-2, Filter Debris Waste (D022, F001, F002) Radionuclides**

IDC	Description	Radionuclides <sup>1</sup>	Rationale
331	Ful-Flo Filters	WG Pu, Am-241, DU, EU, Np-237, Am-243	IDC generated in nearly every TRU building; radionuclides dependent on generation process
335	Drybox Filters, Not Acid Contaminated	WG Pu, Am-241, DU, EU, Np-237, Am-243	IDC generated in nearly every TRU building; radionuclides dependent on generation process

Notes:

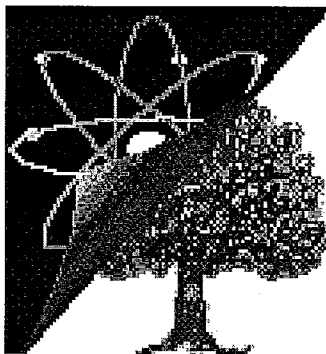
1. Am-243 was not initially predicted to be present by AK; however, it has been identified by NDA and is therefore added as a potential radionuclide in this waste stream.

Key: WG Pu weapons-grade plutonium Am-241 americium-241  
EU enriched uranium Np-237 neptunium-237  
DU depleted uranium Am-243 americium-243

#### 7.10.8 References

1. RFETS 2003. Transuranic (TRU) Waste Management Manual, Revision 6, 1-MAN-008-WM-001.
2. DOE 1995. Transuranic Waste Baseline Inventory Report, Revision 2. DOE/CAO-95-1121.
3. RFETS 2002. RFETS TRU Waste Acceptable Knowledge Supplemental Information. RF/RMRS-97-018, Revision 10.
4. RFETS 2003. Backlog Waste Reassessment Baseline Book, Waste Form 54, Filters and Filter Waste.
5. Waste and Environmental Management System (WEMS) database.
6. EG&G 1993. Waste Stream and Residue Identification and Characterization Building 707, Version 3.2.
7. EG&G 1993. Waste Stream and Residue Identification and Characterization Building 777, Version 3.2.
8. EG&G 1994. Waste Stream and Residue Identification and Characterization Building 774, Version 3.2.
9. RFETS 2003. Waste Stream and Residue Identification and Characterization Building 371, Version 7.0.
10. RFETS 2003. Waste Stream and Residue Identification and Characterization Building 707, Version 7.0.

11. RFETS 2002. Waste Stream and Residue Identification and Characterization Building 774, Version 7.0.
12. RFETS 2002. Waste Stream and Residue Identification and Characterization Building 776/777, Version 7.0.
13. WASTREN 2003. Interoffice Memorandum from Scott Smith to Waste Records Center. SMS-003-2003. June 17.
14. Interoffice Memorandum from Thomas R. Gatcliffe to Eric L. D'Amico, Headspace Gas Analysis Data Evaluation Report For Waste Stream Profile RF110.05 (TRM Filter Debris Waste [F001, F002]) Lot 1, TRG-099-03, June 2003.



**Rocky Flats Environmental Technology Site**

**ACCEPTABLE KNOWLEDGE INFORMATION**

**ACCEPTABLE KNOWLEDGE TRU/TRM  
WASTE STREAM SUMMARIES**

**RMRS-WIPP-98-100**

**Section 7.10**

**TRM Filter Debris Waste (D022, F001, F002)**

**Profile No. RF110.05**

**Revision 2**

Reviewed for Classification/UCNI

By: Unclassified Not UCNI

Reference Exemption Number CEX-032-00

Date: August 6, 2003

**7.10 TRM Filter Debris Waste (D022, F001, F002)**

**Profile No. RF110.05**

**Acceptable Knowledge Waste Stream Summary**

Waste Stream Name: TRM Filter Debris Waste (D022, F001, F002)

Generation Buildings: Buildings 371, 707, 774, 776, and 777<sup>(5,13)</sup>

Waste Stream Volume (Retrievably Stored): 44 55-gallon drums<sup>(5,13)</sup>

Generation Dates (Retrievably Stored): January 1987 – February 2001<sup>(5,13)</sup>

Waste Stream Volume (Newly Generated): 50 55-gallon drums and 4 standard waste boxes<sup>(5,13)</sup>

Generation Dates (Newly Generated): February 2002 – May 2003<sup>(5,13)</sup>

Waste Stream Volume (Projected): 3 55-gallon drums and 3 standard waste boxes<sup>(13)</sup>

Generation Dates (Projected): June 2003 – March 2004<sup>(13)</sup>

TRUCON Content Codes<sup>(1)</sup>: RF 119A, RF 119BA, RF 119BAF, RF 119C, RF 119D, RF 119DE, RF 119E, RF 119EF, RF 119F, RF 119G, RF 119GF, RF 119H, RF 119I, RF 119J, RF 119K, RF 119KF, RF 119L, RF 119M, RF 119MF, RF 119N, RF 119P, RF 119PF, RF 119Q, RF 119R, RF 119RF, RF 119S, RF 119SF, RF 119T

Process Knowledge Demonstrates Flammable VOCs in Headspace < 500 ppm: Yes (see Sec. 7.10.6)

**7.10.1 Transuranic Waste Baseline Inventory Report Information<sup>(2)</sup>**

WIPP Identification Numbers: RF-MR-0331, RF-MT-0331, RF-MT-0335

Summary Category Group: S5000 Waste Matrix Code Group: Filters

Waste Matrix Code: S5410 Waste Stream Name: Filters and Media/TRM

Description from the TWBIR: Ful-Flo filters used to filter solids from aqueous solutions. Additional required processing undetermined. High efficiency particulate air filters used on glovebox air intakes and exhausts.

NOTE: The description from the TWBIR is not completely correct. The Ful-Flo filters in this waste stream were used to filter solids from oils and solvents.

### 7.10.2 Waste Stream Description

Transuranic mixed (TRM) filter debris assigned EPA Hazardous Waste Numbers D022, F001, and F002 consists of Ful-Flo filters (IDC 331) and nonacid-contaminated absolute drybox filters (IDC 335). Material that was trapped in the Ful-Flo filters was the same material that would have contaminated the drybox filters. This waste is generated by similar activities, and is similar in material, physical form, and hazardous constituents, and therefore, is considered a single waste stream. Table 7.10-1 presents the waste matrix codes and waste material parameters for filter debris waste.<sup>(3)</sup>

**Table 7.10-1, Filter Debris Waste (D022, F001, F002) Description**

IDC	IDC Description	Waste Matrix Code	Waste Material Parameters	Weight % (Average)
331	Ful-Flo Filters, not from Incinerator	S5410, Composite Filters	Cellulosics	45%
			Plastics	45%
			Organic Matrix	10%
335	Absolute Drybox Filters, Not Acid Contaminated	S5410, Composite Filters	Cellulosics	80%
			Aluminum-based Metal/Alloys	13%
			Other Inorganic Materials	5%
			Rubber	2%

**IDC 331, Ful-Flo Filters not from Incinerators:** Ful-Flo filters are in-line cartridge type filters used for collecting particulates from liquid streams. The materials of construction for Ful-Flo filters vary depending on the filter type and style. Some are comprised of a cellulose or acrylic fiber with a phenolic or melamine resin binder. Others have a winding and matrix of polypropylene or cotton with a polypropylene core. Some might have a polypropylene cap on one end.<sup>(4)</sup>

**IDC 335, Absolute Drybox Filters, Not Acid Contaminated:** Drybox filters, not acid contaminated, are HEPA filters used on glovebox air intakes and exhausts. The filters consist of a filter medium contained within a wood frame. Older medium consisted of glass fiber with a small percentage of asbestos and a corrugated aluminum foil. Newer medium is constructed of glass and aromatic polyamide fibers (Nomex) and aluminum alloy metal. Wood filter frames are constructed of 3/4-inch fire retardant exterior grade plywood, or particle board.<sup>(4)</sup>

### 7.10.3 Areas of Operation

TRM filter debris waste assigned EPA Hazardous Waste Numbers D022, F001, and F002 were generated by the following defense operations in Buildings 371, 707, 774, 776, and 777.<sup>(3,4,9,10,11,12)</sup>

- Plutonium Production
- Waste and Residue Repackaging and Treatment
- Decontamination and Decommissioning Operations (D&D)

#### 7.10.4 Generation Processes

This waste stream includes filter debris waste assigned EPA hazardous waste numbers D022, F001, and F002, generated primarily from production operations, but also includes filters from waste and residue repackaging and treatment operations, and D&D operations. Process flow diagrams can be found in *WSRIC Building Books* or archived *WSRIC* files.

TRM filters in this waste stream were primarily generated from the filtration of spent solvents and machining oils from production operations in Buildings 707 and 777. Solvents consisting of carbon tetrachloride, Freon TF (1,1,2-trichloro-1,2,2-trifluorethane), or 1,1,1-trichloroethane (TCA), were utilized for cleaning plutonium parts and scrap plutonium in the machining, grit blasting, assembly, and briquetting processes. Particulates from these spent solvents and machining oils collected in Ful-Flo filters (IDC 331) as these liquids were transferred to the carbon tetrachloride and TCA systems in Buildings 707 and 777 for storage pending waste treatment in Building 774. Prior to discharge to Building 774, the solvents and oils were circulated several times through Ful-Flo filter systems to reduce the plutonium and americium concentrations below transfer limits. The Ful-Flo filters from the production gloveboxes and the carbon tetrachloride and TCA operations were generated from filter change out, conducted as necessary.<sup>(4,6,7)</sup>

This waste stream also includes glovebox filters (IDC 335) from Building 774. These filters were contaminated during the solidification of waste oils and solvents from production operations.<sup>(4,8)</sup>

More recent waste generation activities included deactivation, decontamination and decommissioning of gloveboxes and equipment used for historical operations in Buildings 707, 774, and 776/777.<sup>(10,11,12)</sup>

Filters in this waste stream were also repackaged in Buildings 371 and 776. Waste containers were opened, the contents removed and inspected, then repackaged to meet Interim Safe Storage Criteria and WIPP Waste Acceptance Criteria. Absorbent may also be added during repackaging to prevent the accumulation of liquids. In Building 371, drums of filter waste were also overpacked in Standard Waste Boxes to meet WIPP requirements.<sup>(4,9)</sup>

7.10.5 RCRA Characterization

This waste stream is characterized as a mixed waste. The specific BWR Baseline Book Subpopulations and WSRIC Process Numbers associated with filter debris waste assigned EPA hazardous waste numbers D022, F001 and F002 are listed in the WEMS AK Waste Stream Summary for Profile Number RF110.05.<sup>(5)</sup>

This waste stream was generated primarily from historical production operations in Buildings 707 and 777. These operations used carbon tetrachloride, 1,1,2-trichloro-1,2,2-trifluoroethane, and 1,1,1-trichloroethane for cleaning and degreasing. The filters from the Building 774 solidification process are contaminated with these same solvents. Therefore, this waste stream is assigned EPA hazardous waste numbers F001 and F002.<sup>(4)</sup>

The repackaging processes did not use hazardous constituents. The F001 and F002 assigned to filter debris from these processes were derived from the EPA hazardous waste numbers assigned to the waste that was treated and/or repackaged.<sup>(4,9)</sup>

Hazardous constituents were not used for D&D of gloveboxes and equipment. The F001 and F002 assigned to filter debris from D&D operations were derived from the EPA hazardous waste numbers assigned to materials handled in these gloveboxes.<sup>(4,10,11,12)</sup>

This waste stream also includes containers that were originally assigned to a different waste stream by acceptable knowledge (AK), but were subsequently segregated into this waste stream after completion of headspace gas sampling/analysis. EPA hazardous waste numbers F001 and F002 were added to this waste because detectable concentrations of these listed VOCs were found in the container headspace.<sup>(4)</sup>

Visual examination of waste contents at the time of packaging and/or RTR was used to verify that the waste stream does not contain free liquid, explosives, non- radionuclide pyrophoric materials, compressed gasses, or reactive waste. Therefore, this waste stream does not exhibit the characteristics of ignitability (D001), corrosivity (D002), or reactivity (D003).

Beryllium parts were used in the manufacture/assembly of weapons components, and residual beryllium contamination of plutonium parts may have occurred. Filters associated with these operations may have been contaminated with beryllium and therefore, residual quantities of beryllium may be present in the waste stream. Any beryllium present is as a contaminant of the process and not as unused commercial chemical product, and therefore is not a P015-listed waste.<sup>(3,4,9,10,12)</sup>

Filter debris waste are also assigned EPA hazardous waste numbers D002, D007, D009, and D019 in the Transuranic Waste Baseline Inventory Report.<sup>(2)</sup> As described above,



visual examination or RTR are used to ensure liquids are not present, and therefore, the waste will not exhibit the characteristic of corrosivity (D002). Although carbon tetrachloride (D019) is present in the waste, it was used as a solvent, and therefore, the waste stream is assigned the more specific EPA hazardous waste number F001. Filters assigned other EPA hazardous waste numbers, including D007 and D009, are not included in this waste stream but will be included in a separate filter debris waste stream.

The drybox filters (IDC 335) generated at RFETS and sent to the INEEL for storage have the same IDC but are considered different waste streams because of the EPA hazardous waste numbers assigned. The INEEL waste streams (Local ID Number ID-RFO-335T) were generated and shipped to INEEL prior to the full implementation of RCRA and therefore, EPA hazardous waste numbers were assigned to each IDC as a whole.<sup>(2)</sup>

Headspace gas sampling and analysis of containers assigned to this waste stream by AK detected 20 VOCs. The calculated 90% upper confidence limit for the mean concentration of carbon tetrachloride and methylene chloride exceeded the regulatory threshold limit (RTL). These analytes are collectively associated with EPA hazardous waste numbers F001 and F002. AK is confirmed by headspace gas sampling and analysis for these hazardous constituents in this waste stream. However, in addition to the F-listed constituents, chloroform was detected in significant concentrations in several headspace gas samples, and the calculated  $UCL_{90}$  is significantly greater than the PRQL. Further review of AK did not identify a source for chloroform. Therefore, based on the results of headspace gas analysis, this waste stream is also assigned EPA hazardous waste number D022 as required by the WIPP WAP.<sup>(4,14)</sup>

#### 7.10.6 Transportation

The payload containers in this waste stream must also comply with the TRUPACT-II Authorized Methods for Payload Control (TRAMPAC) requirements. Flammable volatile organic compounds (VOCs) were not identified in this waste stream based on the descriptions in the *BWR Baseline Book* and *WSRIC Building Books*. Therefore, flammable VOCs in the payload container headspace are not expected to exceed 500 ppm.<sup>(4,9,10,11,12)</sup>

#### 7.10.7 Radionuclides

Table 7.10-2 presents the radionuclides potentially present in TRM filter debris waste assigned EPA Hazardous Waste Numbers D022, F001, and F002.<sup>(3)</sup>

**Table 7.10-2, Filter Debris Waste (D022, F001, F002) Radionuclides**

IDC	Description	Radionuclides <sup>1</sup>	Rationale
331	Ful-Flo Filters	WG Pu, Am-241, DU, EU, Np-237, Am-243	IDC generated in nearly every TRU building; radionuclides dependent on generation process
335	Drybox Filters, Not Acid Contaminated	WG Pu, Am-241, DU, EU, Np-237, Am-243	IDC generated in nearly every TRU building; radionuclides dependent on generation process

Notes:

1. Am-243 was not initially predicted to be present by AK; however, it has been identified by NDA and is therefore added as a potential radionuclide in this waste stream.

Key: WG Pu weapons-grade plutonium Am-241 americium-241  
 EU enriched uranium Np-237 neptunium-237  
 DU depleted uranium Am-243 americium-243

#### 7.10.8 References

1. RFETS 2003. Transuranic (TRU) Waste Management Manual, Revision 6, 1-MAN-008-WM-001.
2. DOE 1995. Transuranic Waste Baseline Inventory Report, Revision 2. DOE/CAO-95-1121.
3. RFETS 2002. RFETS TRU Waste Acceptable Knowledge Supplemental Information. RF/RMRS-97-018, Revision 10.
4. RFETS 2003. Backlog Waste Reassessment Baseline Book, Waste Form 54, Filters and Filter Waste.
5. Waste and Environmental Management System (WEMS) database.
6. EG&G 1993. Waste Stream and Residue Identification and Characterization Building 707, Version 3.2.
7. EG&G 1993. Waste Stream and Residue Identification and Characterization Building 777, Version 3.2.
8. EG&G 1994. Waste Stream and Residue Identification and Characterization Building 774, Version 3.2.
9. RFETS 2003. Waste Stream and Residue Identification and Characterization Building 371, Version 7.0.
10. RFETS 2003. Waste Stream and Residue Identification and Characterization Building 707, Version 7.0.

11. RFETS 2002. Waste Stream and Residue Identification and Characterization Building 774, Version 7.0.
12. RFETS 2002. Waste Stream and Residue Identification and Characterization Building 776/777, Version 7.0.
13. WASTREN 2003. Interoffice Memorandum from Scott Smith to Waste Records Center. SMS-003-2003. June 17.
14. Interoffice Memorandum from Thomas R. Gatcliffe to Eric L. D'Amico, Headspace Gas Analysis Data Evaluation Report For Waste Stream Profile RF110.05 (TRM Filter Debris Waste [F001, F002]) Lot 1, TRG-099-03, June 2003.